

REMARKS

The present amendment is in response to the Office Action dated December 30, 2005, wherein the Examiner has rejected claims 1-54. Claims 1, 3, 19, 37, and 39 have been amended. Accordingly, claims 1-54 are pending in the present application. Reconsideration and allowance of pending claims 1-54 in view of the amendments and the following remarks are respectfully requested.

Claim Objections:

Page 2 of the Action objects to claim 3 because the word “solid” is misspelled. The misspelling has been corrected in the amendments above. Applicant, therefore respectfully requests that the objection to claim 3 be withdrawn.

Claim Rejections under 35 U.S.C. § 112:

Page 2 of the Action rejects claims 4-6 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regards as the invention. Specifically, the Action states that it is unclear from the specification what is meant by “the T_{is} of the pulses” in claims 4-6.

T_{is} is a commonly known parameter in the area of laser technology. T_{is} is the “time integrated square” pulse length. Sometimes referred to as TIS or t_{IS} . T_{is} is defined as:

$$T_{is} = \frac{\int (I(t)dt)^2}{\int I^2(t)dt}$$

Where $I(t)$ is the intensity as a function of time. Further, T_{is} is defined in the U.S. Application entitled "Long Delay and High TIS Pulse Stretcher," filed on November 13, 2003, which is incorporated by reference. (See p. 2, lns. 32-33 and p. 3, ln. 4 of the present application). "Long Delay and High TIS Pulse Stretcher," application serial number 10/712,545 issued as U.S. patent 6,928,093 on August 9, 2005. The equation defining T_{is} is given at col. 6, ln. 55 of the '093 patent.

Because T_{is} is a commonly known parameter and because it is also defined in an application incorporated by reference the Applicants believe the claims are clear and therefore respectfully requests that the rejection as to claims 4-6 be withdrawn.

Claim Rejections under 35 U.S.C. § 103:

Page 2 of the Action rejects claims 1, 2, 7, 8, 13, and 14 under 35 U.S.C. § 103, as being obvious over Kousai (U.S. 6,143,661) in view of Knowles (U.S. 5,991,324). Applicants respectfully traverses this rejection because Kousai and Knowles, alone or in combination fails to teach, suggest, or disclose every element of the claims.

Certain embodiments of the present invention allow a laser output beam from a first laser unit to be passed through a gas discharge chamber of a second laser unit twice. The output of the first laser unit is reflected by a totally reflective mirror to an offset mirror. The offset mirror reflects the beam into the second laser unit along a path misaligned with the elongated electrodes in the second laser unit. The beam passes through the second laser unit to a pair of totally reflecting mirrors or a total internal reflection prism to create a second pass of the beam through the second laser unit. The second pass of the beam is along the centerline axis of the output of the electrodes in the

second gas discharge chamber which is the optical axis of the output of the second laser unit. (See p. 10, lns. 9-15).

Accordingly, claim 1 as amended recites a gas discharge laser crystallization apparatus for performing a transformation of crystal makeup or orientation in the substrate of a work piece wherein the second laser unit is coupled to the first laser unit such that the laser output of the first laser unit can be double passed through the second gas discharge chamber of the second laser unit.

Double passing through the second gas discharge chamber allows more energy to be extracted from the second laser unit. (See p. 10, lns. 7-9). For example, in one embodiment 2 J per pulse at a repetition rate of 500 Hz can be achieved. Alternatively, 0.25 J per pulse at a repetition rate of 4 KHz. Thus, in either case a 1000 W laser can be achieved. (See p. 10, lns. 27-30). Additionally, at 2 J per pulse, for example, the apparatus as claimed in claim 1 would require less energy than a 2 J per pulse single oscillator system. (See p. 8, lns. 28-33).

Kousai and Knowles, taken either alone or in combination, fail to teach or suggest such subject matter. Specifically, Kousai teaches amplifying laser light generated by an oscillator by passing the light through an amplifier a single time. (See Kousai, Fig. 3). Thus, Kousai does not teach the advantages of double passing the laser light through the chamber to extract all the energy from the second laser unit. (See p. 10, lns. 7-9).

Accordingly, Kousai and Knowles, alone or in combination, do not teach each and every element of the invention claimed in claim 1. Applicants therefore, respectfully requests that the rejection as to claim 1 be withdrawn.

Claims 2, 7, 8, 13, and 14 ultimately depend from claim 1 and are allowable for at least the reasons discussed above with respect to claim 1. Applicants therefore, respectfully requests that the rejection as to claims 2, 7, 8, 13, and 14 be withdrawn.

Page 5 of the Action rejects claims 3, 9, and 15 under 35 U.S.C. § 103, as being obvious over Kousai and Knowles in further view of Iso (U.S. Pub. 2001/0050931). Applicants respectfully traverses this rejection because Kousai, Knowles, and Iso, alone or in combination fails to teach, suggest, or disclose every element of the claims.

Claims 3, 9, and 15 ultimately depend from claim 1 and are allowable for at least the reasons discussed above with respect to claim 1. Applicants therefore, respectfully requests that the rejection as to claims 3, 9, and 15 be withdrawn.

Page 6 of the Action rejects claims 4, 5, 10, 11, 16, and 17 under 35 U.S.C. § 103, as being obvious over Kousai and Knowles in further view of Lai (U.S. 5,329,398). Applicants respectfully traverses this rejection because Kousai, Knowles, and Lai, alone or in combination fails to teach, suggest, or disclose every element of the claims.

Claims 4, 5, 10, 11, 16, and 17 ultimately depend from claim 1 and are allowable for at least the reasons discussed above with respect to claim 1. Applicants therefore, respectfully requests that the rejection as to claims 4, 5, 10, 11, 16, and 17 be withdrawn.

Page 7 of the Action rejects claims 6, 12, and 18 under 35 U.S.C. § 103, as being obvious over Kousai and Knowles in further view of Lai (U.S. 5,329,398). Applicants respectfully traverses this rejection because Kousai, Knowles, and Lai, alone or in combination fails to teach, suggest, or disclose every element of the claims.

Claims 6, 12, and 18 ultimately depend from claim 1 and are allowable for at least the reasons discussed above with respect to claim 1. Applicants therefore, respectfully requests that the rejection as to claims 6, 12, and 18 be withdrawn.

Page 8 of the Action states that claims 19-36 differ from claims 1-18 only by the substitution of the word “means” in place of the word “apparatus”. Therefore, page 8 of the Action rejects claims 19-36 on the same grounds as their counterparts in the group of claims 1-18. Because claims 19-36 contain substantially the same limitations as claims 1-18, claims 19-36 are allowable for substantially the same reasons as claims 1-18. Thus, Applicants respectfully traverse this rejection for substantially the same reasons discussed above with respect to claims 1-18, and Applicants therefore, respectfully requests that the rejection as to claims 19-36 be withdrawn.

Page 8 of the Action states that claims 37-54 differ from claims 1-18 only in that they are drawn to a method of performing rather than an apparatus form performing the claimed limitations. Page 8 of the Action further states that the prior art references used to reject claims 1-18 teach apparatuses as well as there corresponding methods and rejects claims 37-54 on the same grounds as their counterparts in the group of claims 1-18. Because claims 37-54 contain substantially the same limitations as claims 1-18, claims 37-54 are allowable for substantially the same reasons as claims 1-18. Thus, Applicants respectfully traverses this rejection for substantially the same reasons discussed above with respect to claims 1-18. Applicants therefore, respectfully requests that the rejection as to claims 37-54 be withdrawn.

CONCLUSION

Applicants believes that given the above amendments and remarks, the claims are now in condition for allowance and such is respectfully requested. No new claim fees are believed to be necessitated by this response. The Examiner is requested to charge the three month extension fee and any additional fees that may be due with this response to deposit account 13-0480 referencing attorney docket no. 67182669-001600.

Respectfully submitted,

Date: June 30, 2006

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